

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 28 OCT 2005

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Applicant's or agent's file reference A4-256PCT		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/US2004/041354		International filing date (day/month/year) 19.11.2004		Priority date (day/month/year) 20.11.2003
International Patent Classification (IPC) or national classification and IPC H01R13/24				
Applicant MOLEX INCORPORATED				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input checked="" type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 17.06.2005		Date of completion of this report 31.10.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Criqui, J-J Telephone No. +31 70 340-3358		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2004/041354

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-5 as originally filed

Claims, Numbers

1, 3-7, 9 received on 17.06.2005 with letter of 17.05.2005

Drawings, Sheets

1/5-5/5 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2004/041354

Box No. II Priority

1. ☒ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
☒ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).
2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1, 3-7, 9
	No: Claims	
Inventive step (IS)	Yes: Claims	1, 3-7, 9
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1, 3-7, 9
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1 Reference is made to the following document:

D1 : US 4 528 500 A (LIGHTBODY ET AL) 9 July 1985 (1985-07-09)

2 INDEPENDENT CLAIM 1

2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

An electrical terminal, comprising:

a first contact member (30) having an outer pressure contacting end portion (27) for pressure engaging a first electrical device and an enlarged inner end portion (37);

a second contact member (31) having an outer pressure contacting end portion (28) for pressure engaging a second electrical device and an enlarged inner end portion (38);

a sleeve (32) having a constant inner diameter and an outside diameter of the sleeve (32) at a first end thereof being smaller than an outside diameter (34) of the sleeve at a second end thereof;

a through hole for slidably receiving the inner end portions (37, 38) of the first and second contact members (30, 31);

said through hole having a first open end through which the pressure contacting end portion (27) of the first contact member projects and a second open end through which the pressure contacting end portion (28) of the second contact member projects;

restricted stops (35, 36) at the first and second open ends of the through hole for abutting the enlarged inner ends (37, 38) of the contact members to define outer limit positions of the pressure contacting end portions of the contact members;

and

a biasing member (33) in the through hole of the housing to resiliently bias the contact members in opposite directions.

The subject-matter of claim 1 differs from this known *electrical terminal* in that *it includes an intermediate section between said first and second ends of the sleeve, the intermediate section having an outside diameter larger than the diameter of the first end of the sleeve but smaller than the diameter of the second end of the sleeve, the wall thickness at the first end being thinner than the wall thickness at the second end whereby a riveting or bend procedure at the first end can be facilitated by the thinness of the wall of the smaller diameter end.*

2.2 The subject-matter of claim 1 is therefore new and inventive (Article 33(2) and 33(3) PCT).

2.3 The problem to be solved by the present invention may be regarded as:
designing a sleeve for an electrical terminal being sufficiently resistant for its clamping and disassembling and at the same time being sufficiently deformable for facilitating the riveting or bending procedure of one of its ends.

2.4 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
the prior art known from the documents cited in the search, taken individually or in combination, neither discloses nor hints at the claimed solution.

3 DEPENDENT CLAIMS 3-7, 9

Claims 3-7, 9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

4 INDUSTRIAL APPLICABILITY

The subject-matter of the present application, relating to an *electrical terminal*, fulfills obviously the criteria of industrial applicability.

CLAIMS

1. An electrical terminal (30), comprising:
 - a first contact member (34) having an outer pressure contacting end portion (34a) for pressure engaging a first electrical device (56) and an enlarged inner end portion (34b);
 - a second contact member (36) having an outer pressure contacting end (36a) portion for pressure engaging a second electrical device and an enlarged inner end portion (36b);
 - a sleeve (32) having a constant inner diameter and an outside diameter (d1) at a first end (50) thereof being smaller than an outside diameter (d3) at a second end (52) thereof and including an intermediate section (54) between said first and second ends (50,52) of the sleeve, the intermediate section having an outside diameter (d2) larger than the diameter of the first end of the sleeve but smaller than the diameter of the second end of the sleeve, the wall thickness at the first end (50) being thinner than the wall thickness at the second end (52) whereby a riveting or bend procedure at the first end can be facilitated by the thinness of the wall of the smaller diameter end (50);
 - a through hole (40) for slidably receiving the inner end portions of the first and second contact members;
 - said through hole having a first open end (42) through which the pressure contacting end portion of the first contact member projects and a second open end (44) through which the pressure contacting end portion of the second contact member projects;
 - restricted stops (46,48) at the first and second open ends of the through hole for abutting the enlarged inner ends of the contact members to define outer limit positions of the pressure contacting end portions of the contact members; and
 - a biasing member (38) in the through hole of the housing to resiliently bias the contact members in opposite directions.
3. The electrical terminal of claim 1 wherein said restricted stops comprise inwardly turned flanges (46,48) of the sleeve (32) at said first and second open ends (42,44) thereof.
4. The electrical terminal of claim 1 wherein the outer pressure contacting end portion (34a) of said first contact member (34) is dome shaped to present a rounded convex contact surface for engaging the first electrical device.

5. The electrical terminal of claim 1 wherein the outer pressure contacting end portion (36a) of said second contact member (36) is dome shaped to present a rounded convex contact surface for engaging the second electrical device.

6. The electrical terminal of claim 5 wherein the outer pressure contacting end portion (34a) of said first contact member (34) is dome shaped to present a rounded convex contact surface for engaging the first electrical device.

7. In combination with the electrical terminal of claim 1, said first electrical device (56) including a housing (58) having a mounting cavity (60) with a fixed contact (62) at a base (64) of the cavity, said sleeve (32) being mounted in the cavity with the smaller diameter first end (50) of the sleeve projecting into the cavity and the larger diameter second end (52) of the sleeve projecting outside the cavity, and with the pressure contacting end portion (34a) of the first contact member (34) resiliently biasingly engaging the fixed contact at the base of the cavity.

9. The combination of claim 7 wherein said intermediate section (54) of the sleeve (32) bears against inside walls of said mounting cavity (60), leaving the smaller diameter first end (50) of the sleeve spaced inwardly of the inside walls of the cavity.